

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

Applicant : Jacobus Philippus Van Dyk al.  
Serial No. : 09/744,531  
Filed : January 25, 2001  
Page : 5 of 11

Attorney's Docket No.: 12-003001 / RGuthrie/ml  
P15109US00

Attachments following last page of this Amendment:

Affidavit of Inventor Jacobus Philippus van Dyk (previously submitted in corresponding PCT application PCT/1B99/01326, filed on July 27, 1999), submitted herein pursuant to 37 C.F.R. § 1.132



In the matter of:

**INTERNATIONAL PATENT APPLICATION NO. PCT/IB99/01326**

**AFFIDAVIT**

**RECEIVED**  
SEP 10 2003  
TC 1700

I, the undersigned,

**JACOBUS PHILIPPUS VAN DYK**

a citizen of the Republic of South Africa and presently residing at 585 Gerhard Marais Street, Constantia Park, Pretoria, South Africa do hereby make oath and say:-

1.

The facts contained herein are true and correct and are within my personal knowledge, or have been obtained from records to which I have access.

2.

I have received a MEng(Metallurgy) from the University of Pretoria in 1997. I am currently employed by Iscor Limited and work extensively with processes regarding the upgrading of titania slag.

3.

A sample of titania slag derived from a rock type ilmenite ore with the following

composition (expressed as mass percentages) was obtained:

TiO <sub>2</sub>	79.3%
FeO	10.5%
MgO	4.89%
Al <sub>2</sub> O <sub>3</sub>	1.43%
CaO	0.58%
V <sub>2</sub> O <sub>5</sub>	0.37%
Cr <sub>2</sub> O <sub>3</sub>	0.13%
MnO	0.86%
SiO <sub>2</sub>	5.2%

4.

The slag of paragraph 3 had a particle size of  $-850+106\mu\text{m}$  and was roasted at 850°C in air for two hours and was then reduced in 100% CO for 30 minutes. A fluid bed reactor was used for both the oxidation step and reduction step. The oxidised and reduced slag was then subjected to leaching in boiling 20% hydrochloride acid for eight hours at atmospheric pressure. The composition of the leached residue expressed as mass percentages was as follows:

TiO <sub>2</sub>	85%
FeO	6.25%
MgO	4.28%
Al <sub>2</sub> O <sub>3</sub>	1.25%
CaO	0.46%
V <sub>2</sub> O <sub>5</sub>	0.34%
Cr <sub>2</sub> O <sub>3</sub>	0.11%
MnO	0.56%
SiO <sub>2</sub>	5.09%

5.

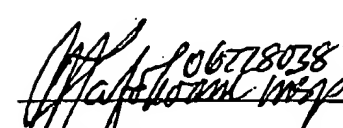
An x-ray diffraction pattern of the oxidised slag is attached as Annexure JPvD1 and shows that no anatase phase stabilised after oxidation. A chemical composition profile through an oxidised slag particle is attached hereto as Annexure JPvD2 which shows limited iron migration to the exposed surface of the particle.

SIGNED at Pretoria, South Africa on this the 27<sup>th</sup> day of July 2000.

  
\_\_\_\_\_  
J. P. VAN DYK

I hereby certify that the abovementioned deponent appeared before me and, on being asked by me, declared that he knows and understands the contents of this affidavit, that he has no objection to taking the oath and that he considers it to be binding on his conscience.

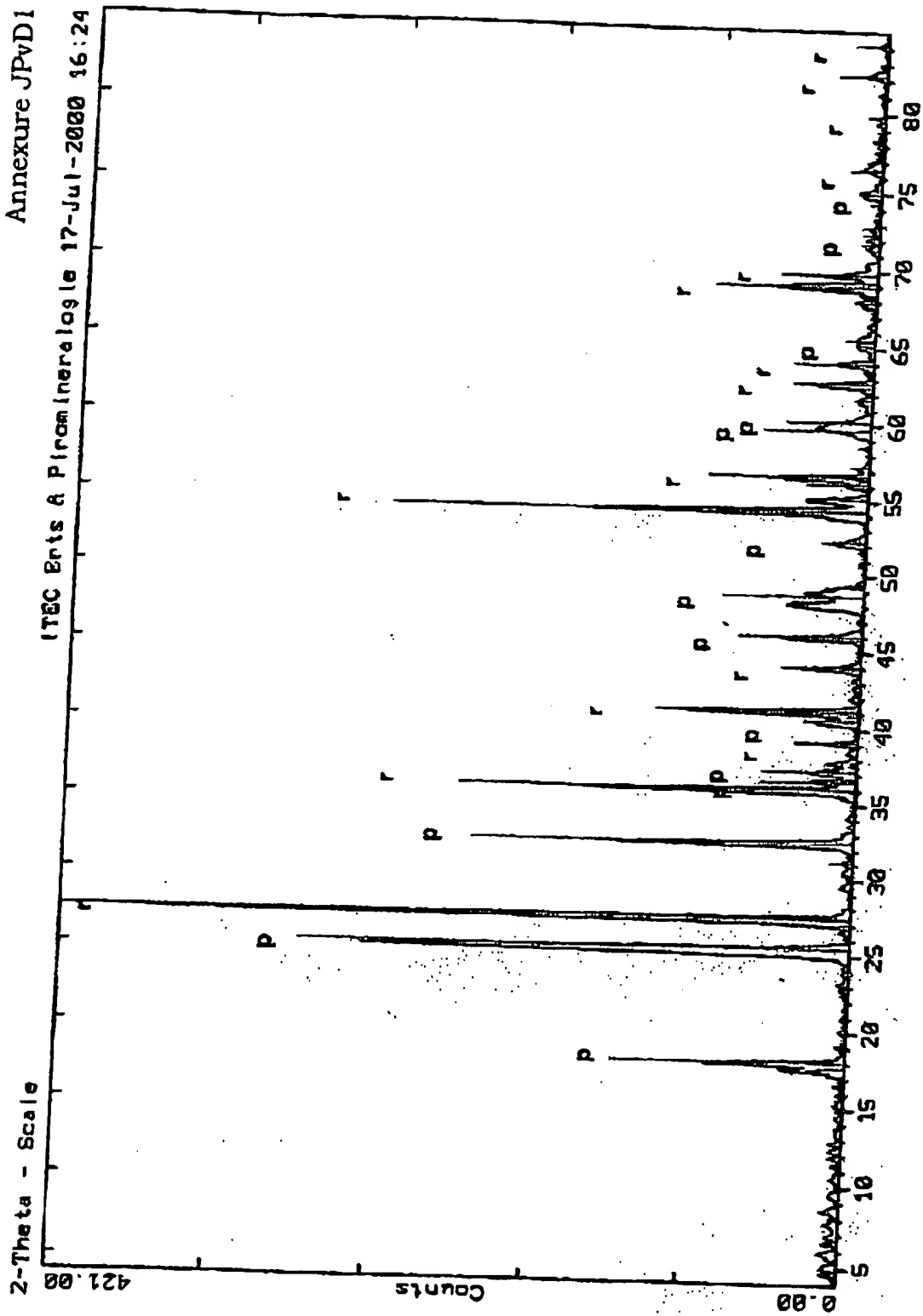
SIGNED at Pretoria, South Africa on this the 27<sup>th</sup> day of July 2000.

  
\_\_\_\_\_  
COMMISSIONER OF OATHS  
MAHLANE THOMAS MAFOKOANE  
119 DUXBURY ROAD  
HILCREST  
PRETORIA

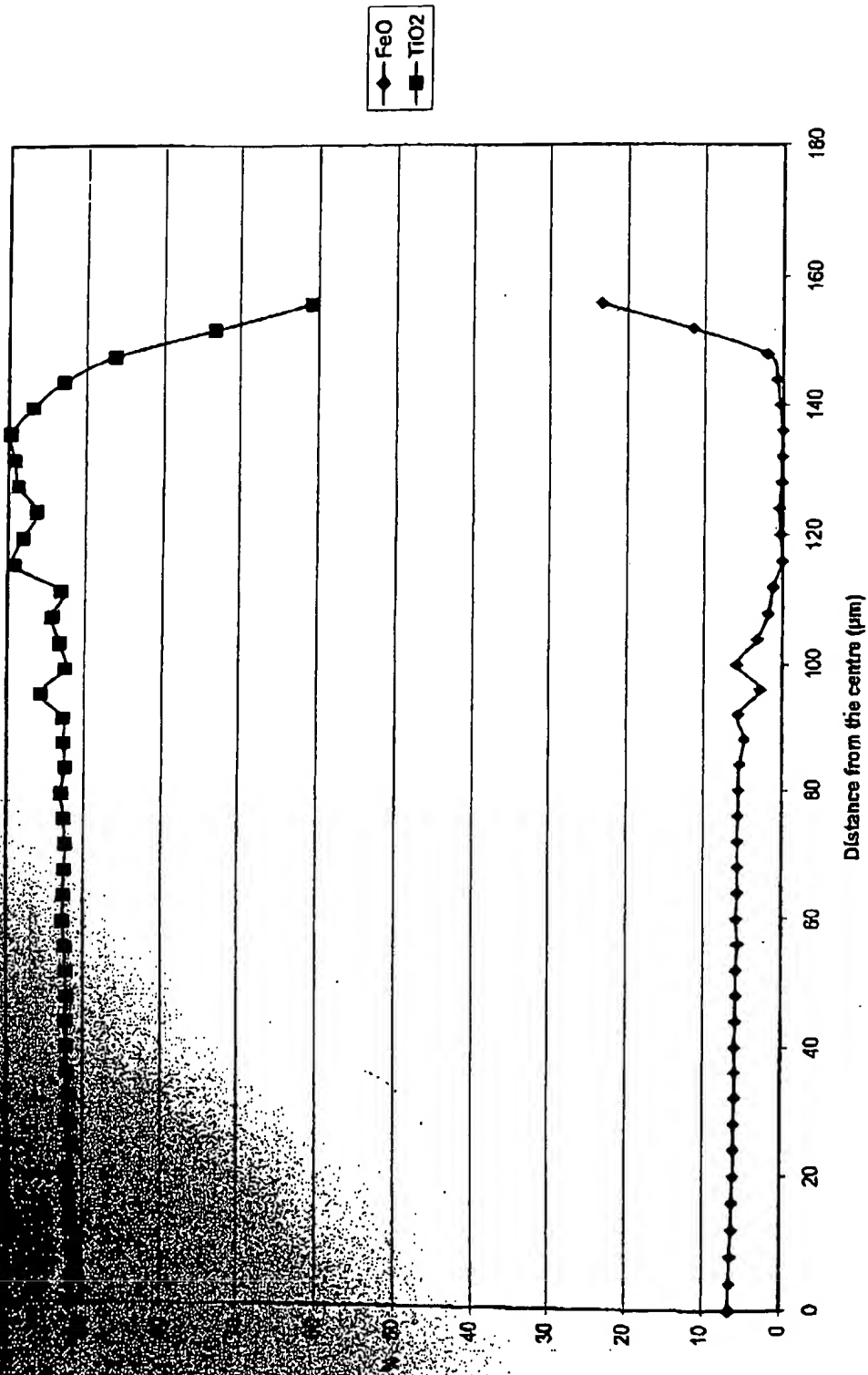
SUID-AFRIKAANSE POLISIEDIENS GEMEENSKAPSDIENSSENTRUM
2000 -07- 27
COMMUNITY SERVICE CENTRE BROOKLYN
SOUTH AFRICAN POLICE SERVICE

Annexure JPvDI

ITC Bts & Planning 17-Jul-2000 16:24



## Annexure JPVd2



*[Handwritten signature]*